

REMARKS

This communication is responsive to the Non-Final Office Action mailed March 23, 2007. In that Office Action, claims 1-11, 13-23, and 27-37 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gillespie et al., U.S. Patent No. 7,109,978 ("Gillespie") and Pryor, U.S. Patent No. 7,084,859 ("Pryor"), and further in view of Neuman et al., U.S. Patent No. 5,942,814 ("Neumann"); claim 12 was rejected under 35 U.S.C. § 103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Nagasaka, U.S. Pat. Pub. No. 2004/0195031 ("Nagasaka"); and claims 24-26 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Reighard et al., U.S. Patent No. 5,432,569 ("Reighard").

With this Response, claim 38 is newly presented. Claims 1-38 remain pending in the application and are presented for consideration and allowance.

Claim Rejections under 35 U.S.C. § 103(a)

Claims 1-11, 13-23, and 27-37 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gillespie and Pryor, and further in view of Neuman. Gillespie is newly cited as providing a form of a capacitive touch sensor.

Patent Office policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. § 103. MPEP § 2141. Four factual inquiries enunciated by *Graham v. John Deere Co.* provide the background for determining obviousness:

- A. Determining the scope and contents of the prior art;
- B. Ascertaining the differences between the prior art and the claims at issue;
- C. Resolving the level of ordinary skill in the pertinent art; and
- D. Evaluating evidence of secondary considerations.

The scope and content of Gillespie relates to a capacitance sensing system for determining a position of a finger 8 on a sensing plane 10 (see Figure 1). Sensing plane 10 includes a touch sensor array 22 (Fig. 2d) including first conductive traces 26 deposited on a top surface 28 of substrate 24, second conductive traces 30 deposited on a bottom 32 of substrate 24, and an insulating layer 36 disposed over sense pads 34 on top surface 28 to insulate the finger 8.

Gillespie beginning at column 10, line 55. Insulating layer 36 is a thin layer (approximately 5 mils.) that is configured to “keep capacitive coupling large.” *Gillespie* at column 11, line 39. *Gillespie* discloses at column 11, lines 45-56 that there are two different capacitive effects taking place when a finger approaches the touch sensor array 22: the first capacitive effect is trans-capacitance (coupling between sense pads 34), and the second capacitive effect is self-capacitance (coupling to virtual ground). Sensing circuitry in *Gillespie* is coupled to touch sensor array 22 and responds to changes in either or both of these capacitances. *Gillespie* states: “This is important because the relative sizes of the two capacitances change greatly depending on the user environment. The ability of the present invention to detect changes in both self-capacitance and trans-capacitance results in a very versatile system having a wide range of applications.”

The Office Action concedes at page 3 that *Gillespie* does not teach or suggest a touch input device coupled to interact with electronic systems of a vehicle. Pryor is cited as purportedly providing a capacitive touch panel for controlling electronic systems in a vehicle. The Office Action concedes at page 4 that *Gillespie* as modified by Pryor does not teach or suggest a capacitive touch sensor disposed between an airbag and an airbag cover. Neuman is cited as providing a sensor disposed between an airbag and an airbag cover. The Office Action concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to place the capacitive touch sensor of *Gillespie* as modified by Pryor between an airbag and an airbag cover as disclosed by Neuman. We respectfully disagree.

It is believed that a *prima facie* case of obviousness cannot be established based on the cited references for at least the reason that Pryor teaches away from combination with *Gillespie*. The scope and content of Pryor relates to touch screen displays for vehicle instrumentation subject to the requirements listed in column 4. Requirement 7 as stated by Pryor is that the touch screen not sacrifice airbag function, and “**thus must not be where the airbag is.**” Pryor provides that the airbag/screen module must be of another design in order for the two to function together (column 4, lines 58-59). This disclosure lends context to the statement by Pryor at column 7, lines 26-28 where a screen is provided that will “co-exist so to speak, with an airbag. This in turn may allow novel location of the invention in the steering wheel.” Based on the scope and content of Pryor, it is believed under the reasoning below that Pryor employs a variety

of touch sensor screens 11-14 in the center stack 5 area of the dashboard (Figure 1c), but as relates to steering wheel touch screens 10, capacitive touch sensor screens **“will not work properly in this mode due to disruption of acoustic or capacitive fields.”** *Pryor* at column 27, lines 50-54.

In particular, *Pryor* discloses at column 13, lines 19-28 that Figure 1c illustrates an example of a vehicle dashboard 1 including a center stack 5 and a touch screen 10 disposed on steering wheel 10 or a touch screen 11, 12 disposed on center stack 5. *Pryor* discloses beginning at column 23, line 38 a particular form of a surface distortion touch screen 301 illuminated by a rear projection TV projector 310 (Figure 3). *Pryor* discloses at Column 27 beginning at line 1 (“the same arrangement as in FIG. 3”) another surface distortion touch screen 430 compatible with an airbag 440, except image projector 410 is located off-axis. *Pryor* describes how deployment of the airbag will move touch screen 430 out of the way. Relative to this embodiment of a touch screen employed with an airbag, *Pryor* discloses at Column 27, lines 43-54 that an advantage of the surface distortion system is that the material can be anything sufficiently transparent that sufficiently deflects light such that the touch screen can be serrated or equipped with a weakened tear seam 491. Relative to other forms of touch screens, *Pryor* states at column 27, lines 50-54: “Other touch screen types may also be advantageously slit or serrated or otherwise induced to break or disintegrate as well, **but many will not work properly in this mode due to disruption of acoustic or capacitive fields for example.** Again a big advantage of the instant invention.”

The scope and content of *Pryor* expressly teaches away from combination with capacitive touch sensors of *Gillespie* and disposing this purported combination between an airbag and an airbag cover (consistent with *Neuman*) since *Pryor* asserts that such a combination will not work properly in this mode due to disruption of capacitive fields. Thus, those of skill in the art would not look to *Pryor* when modifying the detector of *Gillespie* for use with airbags. For at least this reason, a *prima facie* case of obviousness cannot be established based upon *Gillespie* as modified by *Pryor*, such that the rejections to claims 1-11, 13-23, and 27-37 over *Gillespie* and *Pryor* in view of *Neuman* must be withdrawn.

In addition, the purported combination of the cited references fails to establish the requisite *prima facie* case of obviousness for other reasons. For example, the Examiner

interprets at page 3 of the Office Action that Gillespie provides a surface 36 (insulating layer 36) that is accessible to and touchable by a user of the input device, as required by independent claim 1. The Examiner's position at page 4 of the Office Action is that it would have been obvious to one of ordinary skill in the art to place the capacitive touch sensor of Gillespie as modified by Pryor between an airbag and an airbag cover as disclosed by Neuman. However, as illustrated by Gillespie in Figure 2d, touch sensor array 22 **includes** insulating layer 36. If touch sensor array 22 of Gillespie were to be placed between an airbag and an airbag cover as required by Neuman, then insulating layer 36 would no longer accessible or touchable by an occupant of the vehicle.

For this additional reason, the purported combination fails to teach or suggest a surface accessible to and touchable by an occupant of the vehicle, and a capacitive touch sensor disposed between an airbag and the surface, as required by independent claim 1, or providing an airbag cover configured for enclosing an airbag in a vehicle and for providing a finished surface and disposing a capacitive touch sensor on a back surface of the airbag cover opposing the finished surface, as required by independent claim 23.

Moreover, according to Gillespie the thin (5 mils.) insulating layer 36 is provided to keep capacitive coupling large such that the circuitry will respond to both trans-capacitance and/or self-capacitance. (Column 11, lines 36-56). Gillespie notes that "this is important because the relative sizes of the two capacitances change greatly depending upon the user environment." It is respectfully submitted that the purported combination of Gillespie as modified by Pryor and further in view of Neuman teaches away from the "important" feature of Gillespie that requires sensing both trans-capacitance and self-capacitance. Placing touch sensor array 22 (array 22 includes insulating layer 36 according to Gillespie at Figure 2d) behind a cover of an airbag is likely to render Gillespie unsatisfactory for its intended purpose since placing an airbag cover over insulating layer 36 is likely to limit the sensing both trans-capacitance and self-capacitance. For this additional reason, it is believed that a *prima facie* case of obviousness cannot be established based on Gillespie as modified by Pryor in view of Neuman.

Further, it appears that all embodiments of the screen displays in Pryor include some form of image projector 110 (Figure 1d), laser 219 and camera 205 (Figure 2B), etc. The screen displays in Pryor are viewing screen displays. Consequently, there can be no reasonable

expectation of success in placing the capacitive touch sensor of Gillespie as modified by Pryor between an airbag and an airbag cover as disclosed by Neuman, since the airbag cover of Neuman would render the required image projectors of Pryor's screen displays useless.

For these additional reasons, it is believed that a *prima facie* case of obviousness cannot be established based on Gillespie as modified by Pryor in view of Neuman, such that all pending claims are unobvious over the cited references.

Independent claim 23 requires providing an airbag cover including a finished surface, and disposing a capacitive touch sensor on a back surface with the airbag cover opposite the finished surface, where the touch sensor is configured so that the touch to a designated area of the finished surface allows capacitive coupling between the touch and the touch sensor through the airbag cover. Based on the reasoning above, independent claim 23 cannot be rendered obvious by the cited references since Pryor expressly teaches that a touch sensor **must not be where the airbag is** and that placing a capacitive touch sensor inside an airbag cover **will not work properly in this mode due to disruption of . . . capacitive fields for example**.

In addition, Gillespie requires insulating layer 36 to be thin and configured to "keep capacitive coupling large." Replacing insulating layer 36 of Gillespie with an airbag cover and placing the remaining portions of touch sensor array 22 under the airbag cover would likely render the array 22 of Gillespie unsatisfactory for its intended purpose as the airbag cover could not be viewed as an insulating layer that would "keep capacitive coupling large," as required by Gillespie.

For these additional reasons, it is believed that independent claim 23 recites patentable subject matter over the cited references.

Independent claim 28 requires a capacitive touch sensor disposed behind a surface in a vehicle that is accessible and touchable by an occupant in the vehicle, the touch sensor disposed in a manner such that the presence of the touch sensor maintains the look, feel, and functionality of the surface as if the touch sensor was excluded. The Office Action takes a position at page 8 that Gillespie provides the presence of a touch sensor that maintains the look, feel and functionality of the surface as if the touch sensor was excluded since insulating layer 36 covers an entirety of the touch sensor array 22. We disagree.

Insulating layer 36 is described by Gillespie as being an insulating layer configured to keep capacitive coupling large and having the important feature of enabling the sensing circuitry to sense both trans-capacitance and self-capacitance through insulating layer 36. As illustrated by Gillespie in Figure 2D, array 22 **includes** insulating layer 36. Gillespie does not teach or suggest a capacitive touch sensor disposed behind a surface in a vehicle, and Pryor, when read as a whole, teaches away from combination with Gillespie. The visible display screens of Pryor are incompatible with the steering wheel/horn switches of Neuman. The cited references include differences that cannot be reconciled even between the references. Thus, when ascertaining the differences between the cited art and the claims at issue, as required under *John Deere*, it is believed that a *prima facie* case of obviousness cannot be established over Gillespie as modified by Pryor in view of Neuman relative to independent claim 28.

Independent claims 1, 23, and 28 are believed to be unobvious over the cited references, such that the claims depending from claims 1, 23, and 28 are also unobvious. For all of the above reasons, it is believed that claims 1-11, 13-23, and 27-37 recite patentable subject matter over Gillespie as modified by Pryor in view of Neuman. It is respectfully requested that the rejections to claims 1-11, 13-23, and 27-37 under 35 U.S.C. § 103(a) as unpatentable over Gillespie and Pryor in view of Neuman be withdrawn.

Claim 12 was rejected under 35 U.S.C. § 103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Nagasaka. Nagasaka is cited as disclosing a touch sensor button disposed within a spoke of a steering wheel. However, Nagasaka fails to cure the deficiencies of Gillespie as modified by Pryor in view of Neuman as described above. For at least this reason, claim 12 is not rendered obvious over Gillespie as modified by Pryor in view of Neuman and further in view of Nagasaka.

It is respectfully requested that the rejection to claim 12 under 35 U.S.C. 103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Nagasaka be withdrawn.

Claims 24-26 were rejected under 35 U.S.C. §103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Reighard. The Office Action concedes that Gillespie as modified by Pryor and Neuman fails to teach or suggest disposing a capacitive touch sensor on a back surface of an airbag cover and molding the airbag cover using the molds so that the touch sensor is embedded in a back surface of the airbag cover. Reighard is cited as disclosing a

method of implementing an electronic force sensing resistor in an airbag and molding the airbag cover to embed the sensing resistor in the cover. However, as described above, Reighard fails to cure the underlying deficiencies of Gillespie as modified by Pryor in view of Neuman. Consequently, claims 24-26 cannot be rendered obvious over Gillespie, Pryor, and Neuman and further in view of Reighard.

It is respectfully requested that the rejections to claims 24-26 under 35 U.S.C. §103(a) as unpatentable over Gillespie, Pryor, and Neuman and further in view of Reighard be withdrawn.

New Claim 38

Claim 38 is newly presented to particularly point out and distinctly claim additional patentably distinct subject matter. Support for the language of claim 38 is located in the specification at least at page 6 line 18 through page 7, line 2, and page 12, lines 16-19. It is believed that claim 38 further defines over the imaging screens disclosed by Pryor, alone or in combination with the other cited references.

Conclusion

Applicants submit that claims 1-38 are in condition for allowance as they recite patentable subject matter not taught or suggest by the cited references. Withdrawal of the rejections and a Notice of Allowance for claims 1-38 is respectfully requested.

Respectfully submitted,

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